

***United States Court of Appeals  
for the Second Circuit***



**PETITIONER'S  
REPLY BRIEF**





74-1830  
74-2246

IN THE UNITED STATES COURT OF APPEALS  
FOR THE SECOND CIRCUIT

\_\_\_\_\_  
No. 74-2246

\_\_\_\_\_  
CALIFORNIA & HAWAIIAN SUGAR COMPANY,  
Petitioner,

v.

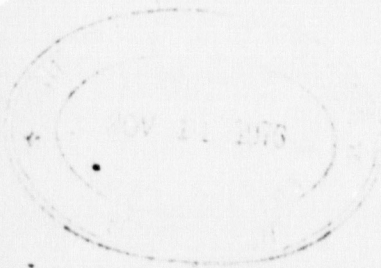
ENVIRONMENTAL PROTECTION AGENCY,  
Respondent.

\_\_\_\_\_  
On Petition for Review of Action of the Administrator  
of the Environmental Protection Agency

\_\_\_\_\_  
REPLY BRIEF OF PETITIONER CALIFORNIA  
AND HAWAIIAN SUGAR COMPANY,

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UNITED STATES COURT OF APPEALS  
FOR THE SECOND CIRCUIT

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CALIFORNIA & HAWAIIAN SUGAR COMPANY,	:	Docket No.
Petitioner,	:	74-2246
- against -	:	
ENVIRONMENTAL PROTECTION AGENCY,	:	
Respondent.	:	

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REPLY BRIEF OF PETITIONER CALIFORNIA  
AND HAWAIIAN SUGAR COMPANY

Respondent's brief is devoid of a coherent justification for its at best mystical effluent limitation guidelines for cane sugar refiners.<sup>1/</sup> Instead, the unique circumstances of this case are submerged in a sea of minutiae. We emphasize these circumstances at the outset.

California and Hawaiian Sugar Company ("C&H") owns and operates the only cane sugar refinery in the

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<sup>1/</sup> Throughout this reply brief we cite Respondent's Brief as "RB", Amstar's Brief as "AB" and our opening brief as "C&H". Due to the fact that the joint appendix of the parties was not prepared and filed until November 5, 1976, we use in this brief the same record citations employed in our opening brief. A set of cross references of record citations to appendix citations for both C&H briefs will be supplied to the Court.



United States that will definitely be required by the regulations to build a self-contained activated sludge treatment plant to meet the 1977 BPT standard.<sup>2/</sup> In addition, C&H is faced with the construction of cooling towers and related facilities to meet the 1983 BAT standards. These facilities will require construction and operating costs several times greater than those estimated by EPA, and the cooling towers and related facilities are almost certain to produce effects detrimental to the environment while effecting an insignificant reduction of BOD and TSS. Because a majority of the required technology is untested at any cane sugar refinery, it is impossible to know whether the single number effluent limitations set by EPA for 1977 and 1983 will be met even if the treatment facilities are constructed and operated. Yet, C&H faces criminal and civil penalties if the technology does not meet EPA's predictions.

Respondent's brief shrouds the fundamental deficiencies of EPA's approach in a patchwork of justifications,

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<sup>2/</sup>

Most of the other refineries are relieved of these burdens under Section 409.22(b)(1) of the regulations by reason of their discharge into publicly owned treatment works (R. 3212-15). Because of its location in a rural area, Amstar's plant at Chalmette, Louisiana, can apparently avoid the necessity of an activated sludge treatment plant through the use of oxidation ditches (Affidavit of Philip F. Meads, annexed hereto as Appendix B). The facility proposed by Godchaux-Henderson uses settlement ponds and is not a self-contained activated sludge system.

as follows:

(1) This Circuit's decision in Hooker supports EPA's issuance of single number effluent limitations, even when the efficacy of the technology is not demonstrated.

(2) While conceding that the activated sludge process "had not been used at a U. S. cane sugar refinery when the limitations were promulgated," the technology is asserted to be transferable (RB 21). Heavy reliance is placed on post hoc rationalizations and extra record assertions to support the alleged transferability, and a host of quibbles is set upon the record deficiencies demonstrated by C&H. This Court has previously held that EPA's use of post hoc explanations of inadequate record support is unacceptable. Hooker Chemicals and Plastics Corp. v. Train, 537 F.2d 620, 634 (1976).

(3) The economic absurdity of the proposed BAT technology is treated with disdain, and the principal case relied upon by C&H in this regard is not even cited in Respondent's brief, Appalachian Power Co. v. Train, 9 E.R.C. 1033 (4th Cir. 1976).

II. ISSUANCE OF A RANGE OF LIMITATIONS WAS  
MORE APPROPRIATE IN THE CIRCUMSTANCES  
OF THIS CASE

Respondent's brief understandably relies on this



Circuit's decision in Hooker Chemicals and Plastics Corp. v. Train, supra, to support its promulgation of single number limitations for cane sugar refiners.

We submit that the circumstances of this case demonstrate the appropriateness of a range of limitations for BPT. The transfer technology of self-contained activated sludge plants has never been employed in cane sugar refining, and it cannot be precisely determined what will be the "degree of effluent reduction attainable by application of 'best' technology." Hooker Chemicals and Plastics Corp., supra, at 630. A range of limitations would make it possible for the local permit authority in California to set the precise limitations once the plant at C&H's Crockett refinery has been operated.

In its brief, EPA cites the decision in American Petroleum Institute v. EPA (Slip Op., 10th Cir., August 11, 1976) ("American Petroleum Institute II") as support for its position that it was empowered to issue single number limitations as opposed to ranges. While that court agreed with the general holding in E. I. DuPont de Nemours v. Train, 8 E.R.C. 1718 (4th Cir., 1976), the opinion recognized that a basic conflict exists between the goals of the Act and the issuance of single number limitations (Slip Op. at 17):

"If the limitations must be applied automatically to each permit application, the Act destroys rather than preserves the rights of the states which §101(b) says that Congress protects. If each state may go its own way, the national policy declared by §101(a) is inhibited. Some accommodation is necessary."

The Court went on to hold that the limitations are presumptively applicable unless rebutted by a permit applicant who must convince the permit issuer that the general limitations do not apply to his particular situation.

Implicit in this holding was the restrained view that such a dispute could only be reviewed with respect to the facts and circumstances involving an individual discharger's permit application. However, this view simply does not comport with the reality of the administration of the Act. As evidenced by the permit issued to C&H by state authorities in California,<sup>3/</sup> both EPA and the state authorities took the position that the effluent limitations stated in these regulations were to be automatically inserted into the permit itself. Neither federal nor state authorities considered that any discretion might be vested in the state permit body to modify the limitations on the basis of the

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<sup>3/</sup> Copies of this permit were attached to both the motion papers of C&H and EPA's reply prior to this Court's issuance of a stay order on November 12, 1975.



4/

particular discharger's circumstances. Until a court addresses this issue directly, there will be no hope that the Congressional goal of preserving some flexibility in the administration of the Act will be achieved.

III. RESPONDENT HAS NOT DEMONSTRATED  
THE TRANSFERABILITY OF ACTIVATED  
SLUDGE AND SAND FILTRATION TECH-  
NOLOGIES

Respondent's brief concedes, as it must, that neither the activated sludge treatment system, which EPA asserts will achieve the 1977 limitation based on an effluent with a concentration of 60 milligrams per liter (mg/l) of both BOD and TSS, nor the sand filtration system, which EPA proposes for achievement of the 1983 maximum concentrations of 40 mg/l BOD and 15 mg/l TSS, was employed by any cane sugar refinery at the time of promulgation of the regulations. (RB 9).

Respondent is thus remitted to demonstrating that these technologies had been employed in other industries and are transferable. The applicable test was stated in CPC International, Inc. v. Train, 515 F.2d 1032, 1048 (8th Cir. 1975) ("CPC I"), as requiring EPA to determine that such technology is available, find that it is

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As discussed in C&H's opening brief (20-21), the 1977 variance provision, 40 C.F.R. §409.22(a), is by its terms unavailable to C&H or to any other standard crystalline cane sugar refinery.

transferable, and make a reasonable prediction that, once transferred, the technology is capable of achieving the special limitations. Accord, Hooker Chemicals and Plastics Corp., supra, 537 F.2d at 636.

Respondent has not questioned the applicability of the test. Rather, it has retreated to a selective restatement and defense of the record evidence called into question. Respondent's brief made no effort to explain EPA's decision to double the BPT maximum concentrations for BOD and TSS from 30 mg/l in the proposed regulations to 60 mg/l in the final regulations following receipt of comments questioning the achievability of the lower figure (C&H 26-27). The Fourth Circuit Court of Appeals considered similar action by EPA as an admission that its conclusions were the product of guesswork rather than reasoned decision-making. Tanners' Council v. Train, 8 E.R.C. 1881, 1884 (1976).

In American Petroleum Institute II, supra, the Tenth Circuit remanded a 1983 limitation for petroleum refineries on the basis that the particular technology was not available nor economically achievable (Slip Op. at 44-45). Pilot plant results showed the designated carbon adsorption technique incapable of meeting the limitation, and reference to municipal treatment in the record was unconvincing



and in part incomprehensible. The court stated (id. at 45): "Examination of EPA's record citations and appraisal of its shifting and inconsistent rationales make it difficult for us to discern upon what, if any, basis EPA promulgated the 1983 limitations." The same inconsistency permeates the record before this Court. To date, EPA has failed to provide a rational justification for the selection of either the 30 or 60 mg/l figure as the predicted activated sludge treatment efficiency level.

While C&H agrees with the mathematical calculations based on EPA's model refineries made by EPA to reach the final limitations in metric and English units (RB 22, 39), it must be emphasized that the figure representing the amount of BOD in the cooling water has always been an assumption and the flow rates used by EPA for its model refineries have consistently been attacked as being unreasonably low. The 1977 limitations are derived by assuming a concentration of 10 mg/l BOD in untreated refinery cooling water. As earlier noted (C&H 53 n. 21), there is no precise means of measuring small amounts of BOD. Whether the amount is significantly greater or lesser than 10 mg/l has a direct effect on the degree of treatment which must be reached with process water to meet the limitation expressed in terms of kg per kkg of melt per

day. Only future experience will validate this assumed loading.

This assumption is further complicated by EPA's model refinery flow rate figures. Industry throughout this proceeding stated that a figure for cooling water usage of 8,000 gal/ton of melt was substantially and erroneously low. EPA raised this figure by only 150 gal/ton in the final Development Document (R 3259), without any explanation for the change or refutation of industry's figures.<sup>5/</sup> Given that the actual flow rates of refineries must be used in determining whether the 1977 limitations are being met, the existence of higher volume cooling water flows could render it impossible to achieve the 1977 limitation even if all the assumptions about the efficiency of activated sludge treatment of process wastes prove true.

With respect to the required addition of sand filtration, Respondent's brief (RB 40-41) erroneously characterizes the general process as one common to the industry and attempts to justify the prediction with post hoc

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<sup>5/</sup> The minimum figure which could be defended on the basis of available data was 10,000 gal/ton (see R. 2835-36, with conversion from metric to English units). On page 2836, a portion of the industry submission, EPA in handwriting noted the numbers "8150" and "8750," but there is no way to discern why the lower figure was chosen for the final Development Document.



reliance on selected portions of the decision in CPC International, Inc. v. Train, (Slip Op., 8th Cir., August 18, 1976) ("CPC II").

Contrary to Respondent's assertions (RB 40), sand filtration bears little similarity to the pressurized diatomaceous earth filtration long employed by refiners to polish sugar liquors (Affidavit of Philip F. Meads, annexed hereto as Appendix B, ¶11). The industry has had no experience with sand filtration of treatment plant effluent. EPA has yet to respond to questions raised throughout the proceeding concerning predicted treatment results with expected difficulties in achieving sludge separation in the biological plant and the probable need to backwash the filters so frequently that flow volumes are greatly reduced and operating costs significantly increased.

Respondent stresses that CPC II upheld the use of deep bed filtration in the corn wet milling industry as transfer technology capable of achieving the new source (Section 306) BOD limitation set for the industry (RB 41). However, Respondent neglected to mention that the Eighth Circuit once again remanded the challenged regulations because of the failure of the record to show the system capable of meeting the TSS standard for new sources of 10 lbs.

per thousand standard bushels of corn processed (Slip Op. at 23-28). Actual results failed to demonstrate the achievability of the limitation. Other industries showed a wide range of results " . . . with no indication of consistency." (Id. at 25). The court strongly suggested that on remand EPA raise the standard by two and one-half times. As EPA is well aware, the activated sludge and sand filtration processes will also be treating both BOD and TSS in cane sugar refinery effluent, and thus its assertion that sand filtration is available technology remains unsupported with respect to the 1983 limitations.

Respondent's brief deals in prolix detail with the demonstration in C&H's brief of the lack of a reasoned bases for transferability of either activated sludge or sand filtration technology. What emerges is at best a welter of confusion, which in itself underlines the inadequacy of EPA's initial administrative process. Should the Court be interested in further parsing the details of the record inadequacies, we attach as Appendix A a refutation of the numerous technical arguments on transferability raised in Respondent's brief.

Of course, the technology is to some degree transferable. This is conceded by C&H, else it would not itself have embarked upon a \$5.5 million project to construct a waste water treatment plant embodying such technology. What



remains totally undemonstrated is the extent to which the technology will achieve the effluent limitations promulgated by EPA. Those limitations are no more than guesswork based exclusively on assumptions rather than fact.

IV. RESPONDENT'S BRIEF WHOLLY FAILS  
TO JUSTIFY EPA'S BAT TECHNOLOGY  
FOR 1983

In our opening brief we contend that EPA failed to follow the mandate of Section 304(b)(2) in establishing BAT by reason of its failure to strike a reasonable balance between the enormous cost of constructing and operating the necessary facilities and their adverse environmental impact, on the one hand, against the miniscule diminution of water pollutants achieved thereby, on the other (pp. 48-68). Specifically, we there demonstrate that:

(1) The actual expense to C&H alone of constructing an activated sludge treatment plant (\$5.5 million) has proven to be nearly equal to the amount estimated by EPA for the entire industry to implement BPT (\$5.6 million) (R. 3261).

(2) EPA's estimates on the costs of installing BAT, principally in connection with the cooling tower requirements, are similarly understated by approximately a factor of two. More importantly, there is no reasonable relationship between the expenditures of these additional

two to three millions of dollars and the marginal, incremental reductions in pollutant discharges which might be achieved. EPA has made no effort to justify its 1983 limitations on the basis of resulting demonstrable environmental benefits.

(3) EPA has refused to treat adequately the potentially severe adverse environmental effects which will result from implementation of the recommended technologies. Although recognizing the existence of these effects, the Agency's sole response has been to suggest vague means by which these harmful results can be minimized. At the same time, EPA has refused to give consideration to the substantive costs such mitigation measures would involve.

(4) It has been reported that several refineries are close to achieving the 1983 standard by use of in-plant controls to prevent sugar entrainment in the large volume cooling water (AB 22). Thus, there may be no need at all for cooling towers, and this question requires re-examination by EPA.

Respondent's brief states in opposition that:

(1) EPA has no obligation to demonstrate 1983 BAT on the basis of any cost/benefit analysis (RB 51);

(2) C&H's cost estimates for its own plant are

inflated; and EPA's own cost estimates remain inviolate (RB 54-62);

(3) The adverse environmental impact on the 1983 BAT technology is exaggerated (RB 43-51); and

(4) By its silence apparently concedes that the benefits of BAT will be miniscule.

We discuss each of these points briefly.

1. Cost-Benefit Test

Section 304(b)(2)(B) requires EPA to consider the cost of achieving the effluent reduction mandated for 1983. Pursuant to Section 301(b)(2)(A), the agency must find that application of BAT "will result in reasonable further progress" in eliminating pollutant discharges. While EPA need not perform a technical benefit/cost analysis for BAT which quantifies each factor in monetary terms, it must provide full consideration of economic costs and these costs must bear a reasonable relationship to the identifiable environmental benefits achieved. American Iron and Steel Institute v. EPA, 526 F.2d 1027, 1051 (3d Cir. 1975); Appalachian Power v. Train, supra, 9 E.R.C. at 1040-41; Legislative History at 1465.

The suggestion in Respondent's brief that EPA need not provide any benefit/cost analysis for 1983 standards



is wrong (RB 51). Indeed, this Circuit in Hooker Chemical and Plastics Corp., supra, held that EPA had not given reasonable consideration to the cost of 1983 technology in remanding two sets of 1983 limitations for the phosphate manufacturing industry. 537 F.2d at 634, 638. Further, Respondent does not discuss, or even cite, Appalachian Power v. Train, which specifically required consideration of the relationship between costs and benefits for BAT and remanded certain limitations for steam electric generating plants on the basis of EPA's failure to provide this consideration.

## 2. EPA's Estimated Costs

The actual costs incurred by C&H to construct an activated sludge plant should be dispositive of the debate over the validity of EPA's cost estimates for BPT. That these expenditures were required solely by virtue of the plant construction is further documented in the Affidavit of Philip F. Meads attached hereto. It is ludicrous for EPA to suggest (RB 61-62) that the cost figures are "exorbitant" or "unnecessary." To do so implies C&H simply spent more money than legitimate market factors would require solely to influence the outcome of this petition.

With respect to BAT, EPA's estimates are no more accurate than those made for BPT. In addition, the Agency's

incremental BAT costs are based in major part on the erroneous facts and assumptions afflicting its BPT estimates.

The comparisons of cost estimates made by EPA solely for tower construction(RB 64) have no independent bearing on this issue.<sup>6/</sup> A cooling tower standing alone is of no value to anyone. Pumping and piping costs must be included to transport waste water to and from the tower. The USCSRA estimates and C&H's figures necessarily included these costs as proper charges against the total tower expense (R. 2882; Affidavit of Philip F. Meads, annexed hereto as Appendix B). These estimates are more detailed than those presented by EPA, and they include equipment and labor costs of installation which one cannot independently ascertain from EPA's estimates (R. 228, 1866, 1927).

Respondent now asserts that EPA used appropriate labor costs in making its estimates (RB 57, citing R 1728); yet the record stands unchallenged that one of the assumptions of the entire economic assessment was an erroneous in-plant labor cost of \$4/hr. (R 205, 1728). EPA's reliance on

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<sup>6/</sup> Respondent attempts to explain the muddled state of the economic record by asserting that the handwritten changes in Supplement A reflect "corrections" which were used in later Development Document estimates. These changes were not available for industry review before or after promulgation of the final regulations; the final record was apparently not compiled until after the time for seeking judicial review had run. Affidavit of Philip F. Meads, ¶11, Appendix B. Analogous action was grounds for a remand in International Harvester Co. v. Ruckelshaus, 478 F.2d 615, 651 (D.C. Cir. 1973).



actual sales costs of equipment consists of four references to quotations from single suppliers on two types of equipment for the small and large model refineries (R. 1734, 1738, 1855, and 1859). Respondent did not even answer the point made by all petitioners herein that its land cost estimates were completely without foundation in urban areas. The actual cost to C&H is shown in the attached Affidavit of Philip F. Meads, ¶4, Appendix B, and the purchase price comparisons show a ten fold discrepancy.

Respondent now contends (RB 65) that it took into account the higher expense of rapid sand filters in assessing BAT costs. However, reference to the cited record pages reveals nothing on which to base this contention. A single figure is provided for operating costs (\$4000/yr.) with the assumption that backwashing will occur once per day (R. 2217-18, 2224-26). The assumption is not premised on any experience with such filters treating sugar wastes, and it is completely unrealistic in view of the technical difficulties previously discussed which are likely to occur with this process. Moreover, EPA's cost estimate for a sand filter of \$53,645 (R. 228), for its large refinery model, when extrapolated to a refinery of Crockett's size would result

in a total expense of approximately \$100,000. C&H's actual construction costs reveal the filtration system will cost \$267,542 to install (Affidavit of Philip F. Meads, ¶12, Appendix B).

Respondent attempts to counter petitioners' argument that stale cost figures were used to estimate treatment costs by now stating the original figures were based on 1973 dollars but were adjusted to 1971 values to permit comparison with other industries (RB 54). This misses the point entirely. The most current costs should have been used throughout, and any comparisons to other industrial categories should have been made in 1973 dollars to give an accurate picture of overall economic cost.

It must be stressed that the fundamental error underlying EPA's BAT cost assessments in the agency's failure to provide any rational justification for these expenditures on the basis of achievement of tangible environmental benefits.<sup>7/</sup> This is true whether one accepts EPA's

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<sup>7/</sup> Respondent now asserts it performed what it terms a "limited cost-to-reduction benefit analysis" which showed the cost of BPT to be \$350 per kilogram of BOD removed per day and the same cost for BAT of \$1050. (RB 51 n. 47). However, the record is devoid of any effort to show a threefold increase in pollutant reduction or other environmental benefits to compare to the threefold increase in costs.



unrealistically conservative cooling tower estimate, or the industry's prediction that tower installation at a large crystalline refinery at a minimum will approximate \$2 million in 1973 dollars (R. 2884). Neither amount can be considered reasonable given the marginal improvement in treatment results and the substantial threat of offsetting environmental harm.

### 3. Adverse Environmental Effects

Respondent attempts to avoid EPA's affirmative duty to consider the non-water quality environmental effects of its treatment technologies by either disputing their existence or belittling their impact.

EPA was alerted to the difficulties in disposing of bacterial sludge (R. 2794, 2872, 2918, 2779). We find incomprehensible in its brief the statement that (RB 45) "[s]ludge disposal is simply not a problem," given the present federal and local governmental concern for appropriate disposal of solid wastes. Cf. 42 U.S.C. §§3251 et seq.; Cal. Govt. Code §§ 66700 et seq.; Cal Health & Safety Code §§ 4500 et seq.; 14 Cal. Adm. Code §§ 17100 et seq. That disposal of solid waste is a particularly acute environmental problem (especially for bacterial sludge) is evidenced by



EPA's own statements and reports as well as those of local government. See 7 Env. Rptr - Cur. Dev. 389 (July 2, 1976); 5 Env. Rptr. - Cur. Dev. 1246, 1252 (Dec. 6, 1974); id. at 948 (Oct. 18, 1974).

Respondent states the obvious in saying that the dilute sludge can be dewatered. The concern is with safe and economical disposal. As demonstrated in the attached affidavit of Philip F. Meads, ¶7, EPA's estimates of the amount of sludge to be disposed are grossly understated.<sup>8/</sup> This amount will be substantially increased if the treatment plant must handle the blowdown from the cooling towers now required as BAT. Further, while making these comments EPA failed to include in its cost assessment the substantial additional expenditures this process will involve.

EPA's estimate of the amount of increased energy usage necessitated by BPT and BAT is substantially below that which will be required at C&H's refinery (Affidavit of Philip F. Meads, attached hereto as Appendix A). C&H's requirements alone are 3 1/2 times the amount estimated by EPA for the entire industry. In addition, EPA provides no standard to measure the significance of the increase in

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<sup>8/</sup> It should be noted that C&H's estimate of the percentage of solid sludge (12%) is equivalent to that reported by the Japanese treatment plant discussed in Respondent's brief (Dellinger Affidavit, Ex. 4, p. 70).

terms of offsetting environmental benefits to be achieved by this resource depletion. See Appalachian Power, supra, 9 E.R.C. at 1045-46.

The cavalier discussion of the potentially severe fogging and noise effects from cooling towers has previously been noted (C&H 52-56). Respondent comments that the record contains not a "shred of evidence" denoting the severity of these problems (RB 48-49). The problem again was put before EPA in this record (R. 2797, 2822-23, 3255).<sup>9/</sup>

There is no question that means exist to reduce the noise and fogging effects caused by cooling towers. The point, however, is that EPA has not fulfilled its mandate when it merely mentions this fact and refuses to consider the potentially huge expense of such mitigation measures in its overall cost assessment. For example, EPA responded

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<sup>9/</sup>EPA now implies these problems are de minimis and it was not required to respond extensively once it was made aware of them (RB 44-45). This position is belied by EPA's present efforts to justify its response. Further, C&H submits the comments on adverse environmental effects clearly passed a threshold of materiality (Portland Cement Ass'n v. Ruckelshaus, 486 F.2d 375, 394 (D.C. Cir. 1973)) requiring agency response, particularly in this context where the Act itself mandates EPA to consider non-water quality impacts. Section 304(b)(1)(B) and (2)(B). Indeed, this Court directed EPA to give further consideration to adverse environmental effects in remanding certain chemical industry regulations in Hooker Plastics and Chemicals Corp., supra, 537 F.2d at 638.

EPA's description of the record data on these problems as "sketchy" would be more appropriately applied to its own record submissions on the predicted efficiency of BPT and BAT. The fact is that no refinery currently employs all the technology designated by EPA, and none using a cooling tower is located in a heavily urbanized area where the severity of its operational effects could be evaluated with actual data.



that "proper placement" could alleviate severe fogging problems; if this is not satisfactory, a "wet-dry tower" can be employed (R. 3255). This leaves an urban refiner with the possibility of constructing a standard cooling tower within limited available space, discovering fog problems were severe, and being forced to construct an entirely new wet-dry tower.

As noted in C&H's opening brief, similar "feeble" comments by EPA on adverse environmental effects were grounds for a remand in Essex Chemical Corp. v. Ruckelshaus, 486 F. 2d 427, 439 (D.C. Cir. 1973). More recently, in a review of new source standards issued for the rendering industry, the Eighth Circuit Court of Appeals first found that EPA had not included certain equipment necessary to complete the treatment facility and had raised its cost estimates on the original equipment without giving its economic consultant an opportunity to review the impact on the industry of these higher figures. These oversights required a remand. National Renderers Ass'n v. EPA, (Slip Op. 7-8, 12-13, No. 75-1182, August 30, 1976). In this case, EPA ceased its consideration with the bare acknowledgment that additional, costly actions might have to be undertaken by refineries to insure adequate and non-harmful operation of cooling towers.

#### 4. Effluent Reductions.

Perhaps the most critical deficiency in EPA's justification of BAT requirement is its failure to demonstrate that these further expenses are reasonable in relation to the minimal further reductions achieved. The cooling towers are intended to concentrate the approximately 10 mg/l <sup>10/</sup> of BOD entrained in refinery cooling waters for treatment in the activated sludge plant. If all treatment is successful, C&H's Crockett refinery will improve its BOD reduction by approximately 12%. This change will have an immeasurable impact on the receiving waters. Moreover, Amstar has reported that certain of its refineries are within a few percent of achieving the 1983 goal through use of in-plant controls only (AB 22).

In the case of the 1983 cane sugar refinery limitations, the incremental reductions which may be achieved are in fact wholly out of proportion to the costs of the required technology. Indeed, EPA has made no attempt to justify the 1983 standards in terms of demonstrable resulting environmental benefits. In Appalachian Power Co. v. Train, supra, 9 E.R.C. at 1041-43, EPA was required to identify such benefits or state why it could not be done. As Respondent's brief does not discuss

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<sup>10/</sup> As earlier noted, supra at page 8, there does not exist at present a precise means of measuring the minute amounts of BOD found in refinery cooling water. No TSS is contributed to the cooling water by the refinery process.



this issue or that decision, it must be deemed to have conceded first, that resulting benefits were not identified and second, that it is possible no such benefits exist.

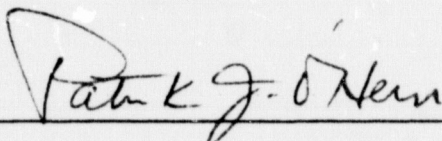
CONCLUSION

The challenged regulations should be vacated and remanded.

DATED: November 8, 1976.

Respectfully submitted,

JOHN E. SPARKS  
PATRICK J. O'HERN  
BROBECK, PHLEGER & HARRISON

By   
Patrick J. O'Hern

APPENDIX A

## APPENDIX A

We here respond to the several contentions in Respondent's brief (23-34, 38-43) concerning transferability of BPT and BAT technologies.

1. Beet Sugar Industry: Respondent cites a statement in the draft Development Document (R. 125) that treatment levels of 50 mg/l of BOD "have been reported" through use of activated sludge in the beet sugar industry (RB 23). As earlier noted (C&H 31, n. 12), no explanation of this statement is found on the page cited. Yet referenced in the draft and final Development Documents is a paper entitled "State-of-Art, Sugarbeet Processing Waste Treatment, EPA, Water Pollution Control Research Series 12060 DSI (July 1971)" (R. 3270).

This paper substantially undercuts EPA's conclusions on the effectiveness of biological treatment in this industry. It concludes such treatment offers "promise" for the future, and EPA translates this promise into an accomplished fact. The paper indicates extensive lagooning (a form of biological treatment) is used either before or after the aeration process. This slower, and much cheaper, process is simply not an available option for large urban refineries lacking adjacent usable land.



Respondent states now that Steffen wastes are disposed of prior to biological treatment (RB 24) in response to C&H's reference to the statements in the "State-of-Art" paper and the August 1973 Beet Sugar Development Document (pp. 68-69) that disposal of these wastes is one of the "most perplexing" problems in this industry. Yet EPA does not indicate if credit is given for prior disposal of these wastes, a factor which would greatly upgrade the final treatment result figure.

Respondent attempts to qualify the statement in the final beet sugar development document that "activated sludge treatment has generally proved to be unsuccessful to date" by noting that the availability of land disposal and the seasonal nature of the industry are the reasons for unsuccessful use" (RB 25-26). Such qualification was not attempted in the final cane sugar Development Document (R. 3212). The point, however, is that EPA may not rely on this type of evidence to predict consistently successful use of activated sludge in the cane sugar refinery industry.

2. Apple, Citrus and Potato Industries: Respondents' brief, while making reference to additional development documents, characterizes the treatment results in these industries in the same terms as were used in the final Development Document



and regulations for the cane sugar refinery industry; i.e., that "some" plants have had good results, that removal rates of 95% "have been experienced," and figures "as high as" 97% have been attained (RB 26-27). These statements do not support the conclusion that consistent results can be achieved in transferring activated sludge treatment to the cane sugar refining industry.

Further reliance (RB 28) is placed on a table appearing in the interim development document for these industries (p. 109) which showed that 13 of 18 plants achieved treatment results of 89%, a figure 6% below what must be met in 1977 by C&H's Crockett refinery in treating its process waste water.<sup>\*/</sup> The data does not disclose the time periods over which such results were attained, or the waste loadings and flow rates needed to make meaningful comparisons. Further, EPA gives no explanation of the problems which prevented the the other cited plants from achieving similar results. Respondent's brief does not answer C&H's point (p. 34, n. 15) that record evidence in these industries indicates sludge bulking controls have not yet been developed. As discussed, infra, an inability to prevent sludge bulking will drastically reduce overall treatment efficiencies.

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<sup>\*/</sup> Respondent admits in footnote 24 that a higher percentage removal will be required at the Crockett refinery because of the high amount of BOD in the process water. EPA then cites a C&H statement that it may be able to meet the 1977 standard if process water can be treated to a level of 115 mg/l. However, this statement was made on the basis of assuming that the refinery cooling water would contain no more than 10 mg/l BOD. See discussion at p. 8, C&H Reply Brief.

Finally, Respondent makes the obvious point that advance screening to remove large trash will not be needed in the cane sugar refining industry (RB 29). The agency does not, however, indicate what percentage of BOD removal such screening contributes in the apple, citrus and potato industries which would be separate and apart from that accomplished by activated sludge treatment alone.

3. Dairy Industry: The record evidence on this industry suffers from the same defects just described. EPA states very high BOD concentrations "have been successfully treated" (RB 29) without documenting the consistency of this treatment or explaining the problems that prevent such consistency from being attained. The record indicates several of the cited plants used aerated lagoons rather than activated sludge treatment, and that two of the seven listed plants could not reach an 89% efficiency level (R. 3511).

Respondent discounts the disparity in the wastes, with high concentrations of fats and proteins in dairy effluent, by stating the different materials are simply sources of nutrients assisting the biological treatment process (RB 29-30). Assuming the validity of this statement, it follows that dairy effluent is more susceptible to activated sludge treatment than is sugar refinery effluent.



C&H admits its wastes will require nutrient addition, but it submits EPA has not documented the ultimate results to be achieved once the proper nutrient mix is determined in a large scale crystalline plant. The dairy industry does not correct this omission.

Indeed, it is difficult to understand Respondent's characterization of dairy wastes as highly carbonaceous. The comparative constituents of whole milk, which contributes 94% of the waste stream (May 1974 Dairy Product Development Document, 42), are: fat - 3.7 percent, protein - 3.5 percent and carbohydrates - 4.9 percent.

In an effort to rebut C&H's reference to the high variability of the dairy treatment results due to plant upsets and shockloads, Respondent states that, of course, results depend on proper design and operation of the treatment facility (RB 30) and notes that the Dairy Development Document (p. 97) states this as well. The point, however, is that such design and operation apparently have not yet been achieved in the dairy industry,<sup>\*/</sup> and its progress in this

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<sup>\*/</sup> The beginning portion of page 97 of the May 1974 Dairy Product Development Document has yet to be quoted by either party. To obtain the complete context of the remarks quoted in each brief, we include it here:

It is recognized that biological waste treatment facilities do not operate at constant efficiencies. Variations of the BOD5 reduction efficiencies from day to day and throughout the year can be expected from any individual system. Factors such as BOD5 concentration, type of waste, flow, temperature, and inorganic constituents of the effluent may affect the rate of treatment of dairy wastes by living organisms, but the interaction of and correlation between (footnote cont.)



regard cannot be deemed a model for design and operation of a plant treating sugar wastes.

In addition, the Development Document states explicitly that procedures for control of bulking sludge have not been developed (R. 3510). Respondent offers no comment on this important problem, which was noted in our opening brief. (C&H 35).

4. Grain Processing: Respondent relies on CPC II for its position that use of activated sludge in the grain milling industry supports its transferability to cane sugar refineries. It was earlier noted that the court there again remanded the new source TSS limitation when it found the record did not demonstrate that use of activated sludge plus sand filtration could achieve the standard.

However, with respect to the other points mentioned in the opinion, the following comments are in order. First, the record evidence cited by C&H in its opening brief (p. 32-33) remains the only such evidence in the administrative record before this Court. The additional record evidence adduced after remand in CPC I and discussed in CPC II is not available for complete evaluation by the petitioners or the Court here.

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Footnote cont.

such factors is not fully understood.

The text continues as quoted by EPA (RB 30, n. 25).

The earlier evidence (C&H 32-33) still renders dubious the successful transferability of activated sludge treatment. The data from Plant A disclosed no success in lowering TSS concentrations to a level akin to that which must be met by sugar refineries. The court in CPC II noted that TSS levels remained disproportionately high even following deep bed filtration (Slip Op. 24-25). Respondent's brief (p. 31) does not answer the fact that sludge bulking and plant upsets prevented achieving the limitations at Plant B. Rather, it merely states it has "suggested" ways of avoiding these problems; there is no record evidence of this being accomplished. The pages in the grain Development Document cited by Respondent for these "suggestions" (pp. 88-89) contain nothing on sludge bulking. Elsewhere, the Document notes that the stated reasons for plant upsets and means for sludge control are still "hypotheses" (pp. 68, 71-72).<sup>\*/</sup>

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<sup>\*/</sup> This evidence was considered by the court in Grain Processing Corp. v. Train, 407 F.Supp. 96 (S.D. Ia. 1976). That decision did in fact remand the 1977 limitations for corn wet mills based on activated sludge treatment. Despite Respondent's efforts to characterize this result as the error of counsel (RB 32 n. 27), the district court clearly based its ruling in part on EPA's failure to consider serious shock load and sludge bulking problems in establishing the effluent limitations (407 F.Supp. at 105).



It must also be noted that the Eighth Circuit in CPC II was approving the 1977 technology for incorporation in new sources, facilities able to avoid problems encountered by existing sources (Slip Op. at 9). Further, in considering the new record data presented following remand, the court's observation that two plants in the industry had "met or nearly met the 1977 guidelines," (id. at 8) most certainly does not constitute a finding that fully consistent results had been achieved or operational problems overcome. Indeed, the results at one of the two plants were above the 1977 limitation for the entire five month period.

5. Raw Sugar: C&H noted in its opening brief (p. 30) that the Development Document itself stated that studies of treatment of combined raw sugar and refinery wastes were inclusive on the treatability of refinery wastes alone (R. 3216). EPA chose not to respond to this point in its brief, and the record thus remains unsupportive of the conclusions EPA attempts to draw by reference to this industry. As in the case of the beet sugar industry, the use of



lagooning to treat raw sugar wastes is simply not a practicable alternative for urban cane sugar refineries. Moreover, while lagooning is a form of biological treatment, it is not subject to the time and flow constraints and operational problems which can afflict a self-contained activated sludge unit (R. 2947, 2949-50).

6. Municipal Treatment: Respondent appears to have missed completely (RB 32-33) C&H's major criticism of the agency's reliance on municipal treatment systems to justify the effectiveness of activated sludge treatment. The point is that the waste water contribution of those refineries now discharging to municipal systems is so small in comparison to the total volume treated that no conclusions can be drawn on the treatment effectiveness when applied solely to sugar refinery wastes. (C&H 35-36).

7. Pilot and Laboratory Studies: The industry has consistently maintained that limited and controlled experiments with pure sucrose wastes fail to provide a basis for predicting results in full scale operations where uncontrollable upsets and changes in waste loads can severely impact sludge settling characteristics and final treatment results (R. 2946-52). EPA's own references support this

position.

Both the pilot and laboratory studies cited by Respondent (RB 33) were mentioned only in the draft Development Document (R. 125) and were not included as supporting statements in the final Document. With respect to the pilot study, the reasons for its subsequent exclusion are best explained by the qualification it is given in the draft Development Document, which after mentioning certain possible results, states (id.): "Some difficulty was reported however with filamentous bacterial growth and problems were also encountered in the control of suspended solids in the effluent of the pilot plant." <sup>\*/</sup>

Nor does the laboratory study relied upon by EPA (R. 3538-46) answer the comment that such results cannot be achieved in full-scale operations. The control factors noted in the paper presenting the study in the record (Simpson & Hemens, Sugar Mill Effluent with Nutrient Additives, 45 JWPCF 2194, October 1973), bear out this comment. The

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<sup>\*/</sup> This study is listed as Miller, J.R., Treatment of Effluent From Raw Sugar Factories, Proceedings of the International Society of Sugar Cane Technologists (1969). However, the paper cannot be found in the volumes containing the proceedings for 1968 or 1969.



research was conducted by holding the influent organic loading constant, a feat which simply cannot be performed in any presently operating refinery. The paper revealed that the slightest changes in loading or nutrient addition affected both operational efficiency and treatment results. The authors candidly stated that higher waste load factors would cause sludge settlement problems and that there would be a considerable amount of excess sludge for disposal from a full-scale plant. (id. at 2199; R. 3543).

8. New Information: Respondent alleges new information has become available which validates its predictions and should be considered by this Court (RB 35-37). C&H first respectfully suggests that self-serving correspondence from foreign refinery operators is not in the same category of post-promulgation evidence as the sworn Congressional testimony admitted by the court in Amoco Oil v. EPA, 501 F.2d 722, 729 n. 10, or the undisputed economic statistics admitted in American Iron and Steel Institute v. EPA, 526 F.2d 1027, 1055 n. 61 (3d Cir., 1975). The circumstances and "new" information in this case bear more similarity to the situation presented in DuPont II, supra, 8 ERC 1729-30. The court there refused to accept evidence which was proffered by



EPA after the filing of petitioners' opening briefs to bolster a record otherwise unsupportive of the challenged limitations.

Should this Court consider these items, C&H contends they offer as little support for EPA's predictions as the material already in the record. The Natal, South Africa correspondence was discussed in C&H's opening brief (p. 30, n. 11), where it was noted that the correspondent stated full results on the use of biological treatment were not yet available. No figures are provided on the size of the cane mills or their water usage and waste loads. One of the two treatment systems included an anaerobic pond, and neither is a self-contained activated sludge plant. (R. 3547).

While many portions of the record herein are difficult to decipher, none compare to Exhibit 4 to the Dellinger Affidavit. We hope the Court is successful in having this document translated into English. When that is done, the letter and report indicate: (1) The Japanese plant treats a volume of process water nearly identical to EPA's model small refinery, a volume seven times less than the amount to be treated at C&H's facility. (2) The TSS treatment design for the plant is 50-100 mg/l, but treatment results are not

disclosed. (3) Aeration ponds were utilized prior to activated sludge treatment. (4) Sludge separation problems occurred at the time of plant start-up, and sludge bulking was observed thereafter. In contrast to the laboratory experiments relied upon by EPA to recommend proper nutrients (pp. 9-10, supra), the Mitsui Company sought to control this phenomenon by addition of sulfuric acid and ferrous chloride (iron) instead of nitrogen and phosphorous. The long-term effectiveness of this effort was not disclosed.

The Godchaux-Henderson proposal (Exhibit 3 to the Dellinger Affidavit) discloses clearly that the refinery enjoys sufficient land availability to employ equalization and settling ponds (the facility occupies 6 3/4 acres). No microorganisms are introduced into the process. This is not a self-contained activated sludge system.

9. Sludge Separation: The most striking statement in Respondent's brief is its attempt to rebut C&H's contentions on the probability of sludge separation problems substantially diminishing treatment results (RB 35): "At the outset it should be noted that the C&H sludge separation complaints are highly speculative because they are not based

on actual occurrences in the cane sugar refining industry." (Emphasis supplied). This is precisely the point C&H has been making about EPA's assumptions and predictions on the efficacy of activated sludge treatment.

C&H's concerns have at least as much support in the record as do EPA's predictions. In every one of the referenced industries where activated sludge treatment was examined, sludge separation and bulking problems were observed which adversely affected treatment results. These concerns were clearly before EPA on this record (R 2946-52). They have been answered only by EPA's "speculative" thoughts on means to minimize the problem (R 3201) and not by any actual experience in treating pure hybocardrate wastes.

10. Sand Filtration. As shown in the discussion of this issue in C&H's Reply Brief, the record does not support EPA's predictions on the effectiveness of sand filtration in meeting 1983 standards. The process is not similar in purpose or function to the diatomaceous earth filtration already used in the industry. The ratio of soluble to insoluble BOD in the treatment plant effluent, which EPA admits is an unknown at present (RB 42), most certainly will affect performance since insoluble material will clog the filters.



Again, only vague references are made by EPA to "proper" design and operation to avoid clogging (R. 3205) with no regard to the economic and treatment result consequences if such measures prove impracticable. Finally, EPA's reliance on CPC II is misplaced since deep bed filtration was found incapable of achieving the TSS limitation in that industry.

APPENDIX B

Affidavit of Philip F. Meads, Ph.D.

November 8, 1976.

AFFIDAVIT OF PHILIP F. MEADS, Ph.D.

STATE OF CALIFORNIA       )  
                                  ) ss.  
COUNTY OF CONTRA COSTA)

PHILIP F. MEADS, being duly sworn, deposes and  
says:

1. I am currently and have been since 1972

Assistant to the Refinery Manager - Environmental Affairs at the  
Crockett, California refinery of the California and Hawaiian Sugar  
Company (C&H). I was Technical Director from 1959 to 1972 and  
Chief Chemist from 1953 to 1959 at the Crockett refinery.

2. In these capacities, I have had major respon-  
sibilities for the planning and development of pollution abatement  
installations required to meet effluent limitations prescribed in  
NPDES Permit (No. CA 000 5240) issued to C&H by the California  
Regional Water Quality Control Board, San Francisco Bay Region.

3. Respondent, The Environmental Protection Agency  
("EPA") raised certain questions in this brief about the costs of  
the activated sludge treatment plant currently being constructed at C&H's



Crockett refinery. These questions may be answered as follows:

- a. Our costs are in current (1976) dollars.
- b. The cost of collecting wastes at the refinery and directing them to the treatment plant are included as a reasonable charge against the biological treatment plant.
- c. There are no refinery improvements included in the costs.
- d. Costs of treating C&H's sanitary wastes are not included.
- e. Costs are not calculated on the basis of treating all wastes to municipal treatment standards.
- f. The costs include a power substation but not power generation.
- g. The estimate of \$500,000 as attributable to the inclusion of the local sanitary district in the use of plant was provided by our engineering consultant, Engineering-Science, Inc., Berkeley, California.

4. C&H did not have land at Crockett, California suitable or adequate for the activated sludge plant required by its NPDES Permit. It was necessary to lease certain adjacent land from the California Lands Commission. A plot of 13.625 acres was leased for an annual rental fee of \$24,109. Only 2.4 acres are being used for the treatment plant. The rental allocation for this portion is \$4,247 per year. The 1976 appraisal value of this 2.4 acre portion is \$35,721.

5. The connected electrical load to the biological treatment plant will be 1,600 kw. It is not presently possible to state precisely how much of this load will be in use most of the time. However, it seems reasonable to expect that the average usage will be at least 1,000 kw. Using the conversion factor employed by the Environmental Protection Agency ("EPA") ( $5 \times 10^9$  KWH/YR = 25,000 barrels oil/day), this represents an oil consumption of about 70 barrels a day. Since most of this energy will be required to actuate aerators and since 96% of the BOD load will be contributed by the refinery, these 70 barrels are essentially all required for the biological treatment of the refinery's wastes.

6. A feasibility study done for C&H in 1973 by James M. Montgomery, Consulting Engineers, Inc., Walnut Creek, California, indicated that power would be a substantial part of the operating charges associated with operation of the cooling towers required to meet the present 1983 effluent limitations. These costs are generated by the need to pump cooling water to and from the towers as well as the operation of the cooling tower fans. With the subsequent increases in fuel costs since 1973, energy would be the major operating cost of such cooling towers.

7. EPA has estimated that C&H process wastes at Crockett will generate for disposal 5,248 lbs. of bacterial solids ("sludge") each day (RB 46 n. 43). C&H consultants have estimated that the sludge wasted will be 14,500 lbs. per day. Digestion will reduce this quantity by 35% to 9,400 lbs per day, the amount requiring daily disposal. This will be passed through a centrifuge and produce a sludge with an estimated 12% solids. The total wet sludge to be disposed will thus amount to 78,000 lbs. per day, in contrast to EPA's estimate of 17,500 lbs. per day.

8. Sand filtration and diatomaceous earth filtration are very distinct types of filtration processes.

a. Sand particles are generally in the



range of 0.4 to 2 millimeters (mm), whereas diatomaceous earth particles are 2 to 40 microns (0.002 to 0.040 mm) in size.

- b. Flows in deep bed filtration are quite dependent on the suspended solids loading. A flow rate of 5 gallons per sq. ft. per minute has been reported for a loading of 120 milligrams per liter of TSS. Diatomaceous earth filtration flow rates are in the range of 3 to 10 gallons per sq. ft. per hour (0.05 to 0.17 gallons per sq. ft. per minute).
- c. Diatomaceous earth is used in pressure filters with pressures up to 60 lbs. per sq. inch. Sand filtration is generally stopped when pressures reach 10 to 15 ft. of water (5 to 7.5 lbs. per sq. inch).

Pressure filtration with diatomaceous earth is a much tighter filtration process than sand filtration and produces much clearer filtrates. The sugar refining industry has had fifty years' experience with pressure filtration with dia-

tomaceous earth in the polishing of sugar liquors and can predict results with accuracy. To my knowledge, no cane sugar refinery has had any experience with sand filtration following the biological treatment and clarification of process wastes from sugar refineries.

9. The process waste water at C&H's Crockett refinery contains a comparatively high BOD loading, in comparison to EPA's model refinery and to other refineries generally, because C&H utilizes a more intense char filtration process than that common to the industry as a whole as a result of its production of relatively greater quantities of brown sugar.

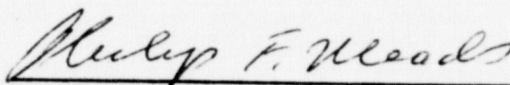
10. I was previously informed that Amstar's plans for treatment of the process waste water from its Chalmette, Louisiana refinery were premised on use of oxydation ditches (a form of biological treatment more similar to lagooning than to activated sludge systems). More current information has not been obtainable.

11. During the period in which EPA's regulations were formulated, I was a member of the USCSRA Environmental Task Force. We received for review Supplement A to the draft Development Document in December of 1973, just after

EPA's issuance of its proposed regulations and the December 1973 Development Document. Supplement A purported to contain EPA's background cost calculations, and industry's comments on the proposed regulations utilized those figures in making comparative computations. Subsequently, EPA made numerous handwritten changes in Supplement A. Neither I nor the Environmental Task Force received notice of these changes. The record in this proceeding containing the modified version of Supplement A, was not available to us prior to expiration of the time for seeking judicial review following issuance of the final regulations on March 20, 1974.

12. C&H currently intends to install deep bed filters in conjunction with its activated sludge plant because such filters appear to be cost effective in reducing chlorine demand; the chlorine is required for treatment of the sanitary wastes. The contractor performing the installation has allocated \$267,542 for these filters and accessories (primarily piping and a drain sump).

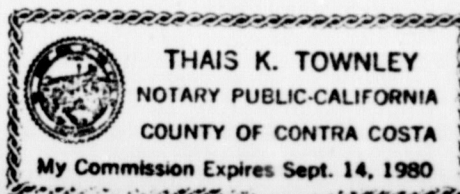
EXECUTED at Crockett, California, this eighth day of November 1976.

  
Philip F. Meads, Ph.D.

Subscribed and sworn to before me this eighth day of November, 1976.

  
Notary Public, State of California

7.







CERTIFICATE OF SERVICE

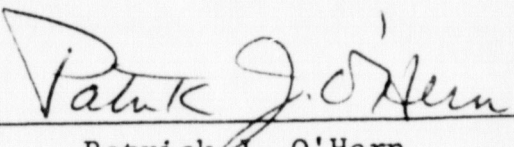
I hereby certify that a copy of Petitioner  
California and Hawaiian Sugar Company's Reply Brief was  
mailed, postage prepaid, this 8th day of November, 1976  
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